

APPENDIX D

MTSI CONSTRUCTION AND GROUND DISTURBANCE ASSUMPTIONS

Temporary Disturbance and Land Permanently Required Assumptions

<u>Type of Structure</u>	<u>Where Used</u>
Guyed “V”-shaped Steel Lattice	Proposed Tangent Structures in most locations
Self-Supporting Steel Lattice	Angle Structures, Dead-end Structures, Mitigation Structure in mountainous areas and other special situations
Self-Supporting Steel Tubular	Agricultural Land, Developed and Urban land and Perennial Stream Crossings

Structure Selection

Guyed V structures have the optimum weight and strength parameters for 500kV line construction. Guyed V structures will typically be used for tangent segments of the line.

Where the line changes direction or terminates the conductor line tensions increase significantly and self supporting lattice structures will be required.

For areas of narrow right-of-way or where the permanent land disturbance and land required must be minimized, tubular steel monopoles will be used.

Span Length/Structure Height

1,400 feet average – Guyed V and Self-Supporting Steel Lattice - Single Circuit -125 Feet

900 feet average - Tubular Steel - Single Circuit -120 feet

1,400 feet average – Self-Supporting Steel Lattice - Single Circuit -125 Feet

1,200 feet average – Self-Supporting Steel Lattice - Double Circuit-185 feet

Number of Structures Per Mile

4 per mile – Guyed V and Self-Supporting Steel Lattice

6 per mile - Tubular Steel

Land Temporarily Disturbed

Guyed V - 200 x 200 feet (0.9 acres per structure) 3.4 acres per mile

Steel Lattice (Single Circuit) - 200 x 200 feet (0.9 acres per structure) 3.4 acres per mile

Steel Lattice (Double Circuit) - 200 x 200 feet (0.9 acres per structure) 3.9 acres per mile

Steel Tubular – 200 x 200 feet (0.9 acres per structure) 5.3 acres per mile

Pulling and Tensioning Sites – 200 feet wide x 600 feet long

One site required every 3 miles

Average of 0.90 acres of disturbance per mile

Material Staging Sites - 400 x 540 feet (5 acres)
One site every 40 miles

Concrete Batch Plants - 1 acre for sections of tubular pole construction in remote areas.
Maximum 35 mile haul distance to tubular pole construction.

Concrete Sources and Delivery

Ready mixed concrete from retail establishments would be used for concrete requirements within a 35 mile haul distance from the existing ready mix batch plant. These existing batch plants are normally located in or near cities and major towns. Ready mix trucks would use access roads established for other construction equipment.

For occasions where a minimal amount of concrete is required in a remote location, concrete would be mixed with volumetric concrete trucks. The volumetric mixer truck with compartments for sand, aggregate, cement and water drives to a foundation site and proportionately combines the ingredients to make concrete.

For sections of tubular pole construction in remote areas a field concrete batch plant would be established. The foundations for tubular poles require significant amounts of concrete and more automated batching is needed. The concrete would be delivered by ready-mix concrete trucks which would use access roads established for other construction equipment.

Land Permanently Required Structures

Guyed V- 150 x 150 feet approximate dimensions to guy anchors

22,500 square feet (0.52 acre) per structure

2.1 acres per mile assuming 4 structures per mile

(land within guy footprint removed from other land uses, although area is restored and habitat value remains)

Steel Lattice- 50 x 50 feet (Single and Double Circuit)

2,500 square feet (0.05 acre) per structure

0.2 acres per mile assuming 4 structures per mile

Steel Tubular- 10 x 10 feet

100 square feet (0.002 acre) per structure

0.013 acres per mile assuming 6 structures per mile

Townsend Substation

Substation site size approximately 52 acres. Assume rub out – cut and fill grading and compaction to serve as foundation for equipment.

Access Levels and Ground Disturbance

- 1 **Existing Improved Roads:** Previously disturbed. Roads generally are in good condition but may require small improvements at stream crossings, steep slope areas, and other locations. New ground disturbance would be minimal. New spur roads would be required to access each structure site; an average of 300 feet of new spur road for each structure. Spur roads would disturb approximately 0.4 acres per mile of transmission line.
- 2 **Roads that Require Improvement:** Previously disturbed. Existing two-track or narrow unimproved roads would require improvement to make roads serviceable (e.g., mowing, grading) for construction. Low ground disturbance; assume approximately 0.5 to 1.0 miles of road improvements for each mile of transmission line. Road improvements would disturb approximately 0.75 to 1.0 acres per mile of transmission line. An average of 300 feet of spur roads would be required to access each structure site. Spur roads would disturb about 0.4 acres per mile of transmission line
- 3 **Construct Road in Flat Terrain (0 to 8 percent):** Low to moderate ground disturbance for new access road construction; assume approximately 1.0 to 1.2 miles of new roads would be required for each mile of transmission line. Road construction would disturb approximately 1.7 to 2.0 acres per mile of transmission line.

- 4 **Construct Road in Sloping Terrain (8 to 15 percent):** Moderate ground disturbance for new access road construction; assume 1.2 to 1.5 miles of new road would be required for each mile of transmission line. Road construction would disturb approximately 2.0 to 2.5 acres per mile of transmission line.
- 5 **Construct Road in Steep Terrain (15 to 30 percent):** Moderate to high ground disturbance for new access road construction; assume approximately 1.5 to 2.0 miles of new road would be required for each mile of transmission line. Road construction would disturb approximately 2.5 to 3.4 acres per mile of transmission line.
- 6 **Construct Road in Very Steep Terrain (over 30 percent):** High to very high ground disturbance for new access road construction; assume approximately 2.0 to 3.0 miles of new road would be required for each mile of transmission line. Road construction would disturb approximately 3.4 to 5.0 acres per mile of transmission line.

Access Assumptions:

- Assume permanent new access roads would be graded to a travel service width of 14 feet wide, including back slopes and side cast material.
- Assume spur roads would be an average of 300 feet in length.